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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/566,453	08/30/2006	Torsten Balduf	5003073.072US1	5152
29737 7590 11/25/2008 SMITH MOORE LEATHERWOOD LLP P.O. BOX 21927 GREENSBORO, NC 27420				
EXAMINER				
LI, JUN				
ART UNIT		PAPER NUMBER		
4181				
NOTIFICATION DATE		DELIVERY MODE		
11/25/2008		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/566,453

Applicant(s)

BALDUF ET AL.

Examiner

JUN LI

Art Unit

4181

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-24 is/are pending in the application.
- 4a) Of the above claim(s) 12-24 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SF/08)
Paper No(s)/Mail Date 06/01/2008
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date ____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: ____

DETAILED ACTION

Election/Restrictions

1. Restriction is required under 35 U.S.C. 121 and 372.

This application contains the following inventions or groups of inventions which are not so linked as to form a single general inventive concept under PCT Rule 13.1.

In accordance with 37 CFR 1.499, applicant is required, in reply to this action, to elect a single invention to which the claims must be restricted.

Group I, claim(s) 1-11, drawn to a catalyst support.

Group II, claim(s) 12, drawn to a reactor comprising the claimed catalyst support.

Group III, claim(s) 13-22, drawn to a process for producing a coating on the claimed catalyst support.

Group IV, claim(s) 23-24, drawn to a process for preparing an organic molecule.

2. The inventions listed as Groups I-IV do not relate to a single general inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons: the special technical feature which is referred to Annex B of Appendix A1 of the MPEP (Administrative Instructions under the PCT, "Unity of Invention"). Unity exists only when there is a technical relationship among the claimed inventions involving one or more of the same or corresponding claimed special technical features. In this case, the technical feature shared by each invention is the claimed catalyst support. The question of unity of invention has been reconsidered retroactively by the examiner in view of DE10108380, which makes clear that the inventions of group I-IV lacks the same or corresponding special technical feature because the cited reference(s) appear to demonstrate that the

claimed technical feature does not define a contribution which each of the inventions, considered as a whole, makes over the prior art. Accordingly, the prior art of the record supports restriction of the claimed subject matter in to the groups as mentioned immediately above.

3. During a telephone conversation with Mr. Phil McCain on Nov 5th a provisional election was made without traverse to prosecute the invention of group I, claim 1-11. Affirmation of this election must be made by applicant in replying to this Office action. Claims 12 -24 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

4. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

5. The examiner has required restriction between product and process claims. Where applicant elects claims directed to the product, and the product claims are subsequently found allowable, withdrawn process claims that depend from or otherwise require all the limitations of the allowable product claim will be considered for rejoinder. All claims directed to a nonelected process invention must require all the limitations of an allowable product claim for that process invention to be rejoined.

In the event of rejoinder, the requirement for restriction between the product claims and the rejoined process claims will be withdrawn, and the rejoined process

claims will be fully examined for patentability in accordance with 37 CFR 1.104. Thus, to be allowable, the rejoined claims must meet all criteria for patentability including the requirements of 35 U.S.C. 101, 102, 103 and 112. Until all claims to the elected product are found allowable, an otherwise proper restriction requirement between product claims and process claims may be maintained. Withdrawn process claims that are not commensurate in scope with an allowable product claim will not be rejoined. See MPEP § 821.04(b). Additionally, in order to retain the right to rejoinder in accordance with the above policy, applicant is advised that the process claims should be amended during prosecution to require the limitations of the product claims. **Failure to do so may result in a loss of the right to rejoinder.** Further, note that the prohibition against double patenting rejections of 35 U.S.C. 121 does not apply where the restriction requirement is withdrawn by the examiner before the patent issues. See MPEP § 804.01.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.

2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. **Claim 1-4 and 6-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Heisel et al (DE10108380) in view of Baldi et al (US 4292208).**

Regarding claim 1 and 3, DE10108380 teaches a thermal sheet metal (item 1 Figure 2) coated with a thin layer of catalyst (item 2, Figure 2) (machine translated description page 2 6th paragraph lines 2-3) with holes on the surface (machine translated description page 2 8th paragraph lines 7-8 and apertures shown on Figure 3 and Figure 4). Such holes and apertures may be considered fissures according the broadest reasonable interpretation of the word fissures.

DE10108380 reference does not recite that the fissure length is 500m/m^2 and that the coated layer has a specific adhesive tensile strength at least about 500 N/m^2 .

Baldi et al teach a there-dimensional micro-fissures containing surface is coated with different catalytic metals (item 40 figure 5, column 9 lines 62- 65, line 68- column 10 lines 1, lines 7-11) on supporting iron web, wherein there are more than 1000 m/m^2 total fissure length as determined by the fissure size (claim 1 and 3).

It would have been obvious to one ordinary skill in the art at the time of the invention filed to adopt the porous coating surface as taught by Baldi et al into the method of Heisel. The suggestion or motivation for doing so would have been to improve catalytic surface area and enhance high temperature endurance capability of the catalyst coating (column 9 line 68-columns 10 line 1, column 11 lines 13-17) for intended uses.

The reference of Heisel in view of Baldi has been described as above. Heisel in view of Baldi is silent about the characteristic of the coated layer has a specific adhesive tensile strength at least about 500 N/m^2 . Since the prior art discloses a coating having the same material and similar fissure length, the adhesive tensile strength is an expected feature of the product because this characteristic is a function of the coating itself and since the coating is the same, the characteristics is thus expected absent evidence to the contrary.

Regarding claim 2, Heisel et al teach the coating layer thickness is within 1-1000 μm , which overlaps with the claimed 0.02 mm. The claimed layer thickness can be achieved via optimization of routine experiments. MPEP also clearly states that in the case where the claimed ranges "overlap or lie inside ranges disclosed by the prior art" a *prima facie* case of obviousness exists. SEE MPEP § 2144.05 R5.

Regarding claim 4 and 8, Heisel teaches that the catalyst support body material can be prepared from metal (machine translated detailed description page 4 paragraph 12, claim 1, 6 and 7), wherein stainless steel are preferred (machine translated detailed description page 5 paragraph 5, 6 and 7). Heisel also teaches that there is catalytic silver layer on top of an aluminum oxide inter layer coated on the thermal steel sheet (machine translated detailed description page 5 paragraph 5, claim 5, 6 and 7).

Heisel does not expressly state that the thermal expansion coefficient of the catalyst support body is at least 10% higher than the coating layer of aluminum oxide. However, thermal expansion coefficient is a physical property inherent to the material. The thermal expansion coefficient of steel is at least 10% higher than aluminum oxide.

Therefore, the thermal expansion coefficient associated with catalyst support body and coating are inherent characteristics in the prior art.

Regarding claim 6 and 7, Heisel et al teach that there is catalytic silver layer on top of a aluminum oxide inter layer coated on the thermal metal sheet (machine translated detailed description page 5 paragraph 5, claim 7), which read to the limitation of inert constituent defined as non-catalytically acting constituent in the instant specification page 9 lines 15-16.

Regarding claim 9 and 10, Heisel et al teach that there are plurality of thermal sheet (Figure 3 and machine translated detailed description paragraph 11, 12) wherein arrow in Figure 3 gives flow direction. Heisel et al further teach that thermal sheets are connected together for form cushion-like arch, which read to the recited limitation of multi-walled sheet structure (Figure 2, machine translated detailed description paragraph 12).

Regarding claim 11, Heisel teaches that the catalyst support body material can be prepared from ceramic with walls of the reaction space connected (machine translated detailed description page 4 paragraph 12, claim 1, 6 and 7).

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Heisel et al (DE10108380) in view of Baldi et al (US 4292208), as applied to claim 1 as stated above, and further in view of Hechler et al (US 7253308).

Regarding claim 5, Heisel et al teaches the catalytic coating can be used for oxidization of ethylene to ethylene oxide (claim 13). Heisel et al is silent about partially oxidization of propene and acrolein.

Hechler et al teaches that a catalyst on the heat exchanger plate can oxidize C3 or C4 compound including propene and acrolein (column 3 lines 1-4, column 4 lines 64-66). Hechler et al further teach that the oxidization can not yield a pure acrylic acid because reactants are not fully converted (column 3 lines 36-39).

It would have been obvious to one ordinary skill in the art at the time of the invention filed to substitute ethylene of Heisel et al with known reactants of propene and acrolein to expand the reactants choice for oxidation reaction via using this catalyst coating. One ordinary skill in the art would have appreciated to adopt the known substance of propene and acrolein to substitute ethylene to expand the applicable usage for the catalyst of Heisel et al as taught by Hechler et al (column 3 lines 1-4, column 4 lines 64-66).

Conclusion

1. All the claims are rejected for the reasons of the record.
2. The additional references on the 892 have been cited as art of interest since they are cumulative to or less than the art relied upon in the rejections above.
3. The additional references cited on the 1449 have been reviewed by the examiner and are considered to be art of interest since they are cumulative to or less than the art relied upon in the above rejections.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JUN LI whose telephone number is (571)270-5858. The examiner can normally be reached on Monday-Friday, 8:00am EST-5:00 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vickie Kim can be reached on 571-272-0579. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/JUN LI/

Examiner, Art Unit 4181

/MICHAEL MARCHESCHI/

Primary Examiner, Art Unit 1793